

# PATENT SPECIFICATION



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Complete Specification Accepted: April 23, 1935.

## PROVISIONAL SPECIFICATION

### Improvements in or relating to Windscreen Wipers

We, VAUXHALL MOTORS LIMITED, a British Company, of Kimpton Road, Luton, Bedfordshire, and WILLIAM WINDLEY CONSTANTINE, a British Subject, of 111, Grosvenor Road, London, S.W. 1, do hereby declare the nature of this invention to be as follows:—

This invention relates to windscreen wipers, and has for its object to provide means whereby the front surface of a curved windscreen or like curved glass surface may be kept wiped clear of moisture.

Ordinary windscreens are flat and many devices have been produced for moving a form of squeegee over a flat surface of glass to keep the glass clear in spite of condensation or rain upon it, but such devices will not operate to keep clear a curved surface of glass.

According to the present invention means are provided in combination with a curved windscreen or other curved glass surface which comprise a squeegee and means to move the squeegee over a curved path approximately coincident with the windscreen.

The wiper blade may be mounted to maintain a position during its wiping movement at right angles to the axis of curvature and can itself be made curved or flexible so as to conform with the curvature of the windscreen.

In the following description various forms of the apparatus in accordance with the invention are set forth.

In one construction the wiper mechanism may be located close to the bottom edge of the screen with a spindle projecting in a direction approximately at right angles to the adjacent screen surface and forwardly thereof. The wiper arm is mounted upon the spindle with a pivot so that it can hinge towards and from the screen surface. At its free end it carries a squeegee blade which is hinged to the arm so as to press as evenly as possible on to the windscreen over its entire length. A spring is provided to press the hinged wiper arm towards the windscreen and in order to prevent undue pressure of the squeegee upon the glass the wiper arm carries a roller, which may be a rubber

roller, at a point between the squeegee and the pivotal attachment of the wiper arm to the spindle which operates it, this rubber roller pressing upon the windscreen and tending to maintain a constant distance between the free end of the wiper arm and the surface of the glass. With such a construction the squeegee does not at all times lie parallel to the axis of curvature of the windscreen and therefore at the extremes of movement it will contact with the windscreen surface only over the central portion of its length. In order to overcome this difficulty the wiper blade is preferably made flexible or bendable in a plane at right angles to the plane of the windscreen so that when it assumes a position which lies askew to the axis of curvature it can conform to the curved surface. To achieve this the back plate of the wiper arm may either be made of spring steel or it can be divided into sections, each of which is pivoted to a spring steel backing member. Again, a squeegee may be provided in which instead of a steel backing being pressed over the back of the squeegee, the rubber of the squeegee is moulded around a spring wire. Preferably the spring which thus stiffens the squeegee and at the same time allows it to bend, is given initially a curved shape so that when the wiper becomes parallel to the axis of curvature of the windscreen the blade is pressed backwardly at its ends into a straight formation, while at other times its natural curvature tends to make it conform to the curvature of the screen.

The employment of a curved wiper arm is also of value on screens which have more than one axis of curvature, for example screens which have a torical or spherical outer surface.

Again, in yet another construction the wiper blade or blades may be caused to move up and down in a direction parallel to the axis of curvature of the windscreen, the wiper blades extending horizontally from a vacuum cylinder or cylinders located at the sides of the windscreen. In this case the cylinders extend parallel to the sides of the windscreen and the wiper blade is horizontal, that is to

say at right angles to the cylinders. It is moved up and down thereby in a direction parallel to itself and its working edge is curved to fit the curvature of the

windscreen.

Dated this 19th day of February, 1935.

E. WILLIAMSON,  
Chartered Patent Agent.

### COMPLETE SPECIFICATION

#### Improvements in or relating to Windscreen Wipers

We, VAUXHALL MOTORS LIMITED, a British Company, of Kimpton Road, Luton, Bedfordshire, and WILLIAM WINDLEY CONSTANTINE, a British Subject, of 111, Grosvenor Road, London, S.W. 1, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to windscreen wipers, and has for its object to provide means whereby the front surface of a curved windscreen or like curved glass surface in a motor car or elsewhere may be kept clear of moisture.

Ordinary windscreens are flat and many devices have been produced for moving a form of squeegee over a flat surface of glass to keep the glass clear in spite of condensation or rain upon it, but such devices will not operate to keep clear a curved surface of glass.

The invention consists in the combination of a curved windscreen or like curved glass surface, and a wiper blade which is pivotally mounted and is itself flexible and normally curved so that throughout its movement it maintains wiping contact with the windscreen.

The invention also consists in the combination of a curved windscreen or like curved glass surface, and a wiper blade which is curved to the shape of the windscreen, and means to reciprocate the blade in a direction parallel to the axis of curvature of the windscreen.

In the following description, various forms of the apparatus in accordance with the invention are described with reference to the accompanying drawings in which:—

Fig. 1 is a front view of one form of wiper mechanism and

Figs. 2, 3 and 4 are side views of various kinds of wiper blades suitable for this form; and

Fig. 5 is a further modification.

In the various figures, where convenient, like reference characters indicate like parts.

In the construction illustrated in Fig. 1 the wiper mechanism may be located close to the bottom edge of the screen A with a spindle *h* projecting in a direction approximately at right angles to the adjacent screen surface and forwardly

thereof. The wiper arm *b* is mounted upon the spindle with a pivot so that it can hinge towards and from the screen surface. At its free end it carries a squeegee blade *a* which is hinged to the arm so as to press as evenly as possible on to the windscreen over its entire length. A spring *g* is provided to press the hinged wiper arm towards the windscreen and in order to prevent undue pressure of the squeegee upon the glass the wiper arm carries a roller *h*, which may be a rubber roller, at a point between the squeegee and the pivotal attachment of the wiper arm to the spindle which operates it, this rubber roller pressing upon the windscreen and tending to maintain a constant distance between the free end of the wiper arm and the surface of the glass. With such a construction the squeegee *a* does not lie parallel to the axis of curvature of the windscreen at all times and therefore at the extremes of movement it would, in the case of the usual wiper blade, contact with the windscreen surface only over the central portion of its length. In order to overcome this difficulty the wiper blade is made flexible or bendable in a plane at right angles to the plane of the windscreen as shown in Fig. 2 so that when it assumes a position which lies askew to the axis of curvature it can conform to the curved surface. For this purpose the back plate *a1* of the wiper blade may either be made of spring steel as shown in Fig. 2; or it can be divided into sections *a2* as shown in Fig. 3, each of which is pivoted to the spring steel backing member *a1*.

Again a squeegee may be provided in which instead of a steel backing being pressed over the back of the squeegee, the rubber of the squeegee is moulded around a spring wire *a3* as shown in Fig. 4. The spring which thus stiffens the squeegee and at the same time allows it to bend, is given initially a curved shape so that when the wiper becomes parallel to the axis of curvature of the windscreen the blade is pressed backwardly at its ends into a straight formation, while at other times its natural curvature tends to make it conform to the curvature of the screen.

In another construction shown in Fig. 5, the wiper blade or blades *a* may be caused to reciprocate in a direction parallel to the axis of curvature of the

windscreen, the wiper blades extending horizontally from the driving mechanism *f* comprising a vacuum cylinder or cylinders located at the sides of the wind-  
 5 screen. In this case the cylinders extend parallel to the sides of the windscreen and the wiper blade *a* is horizontal, that is to say at right angles to the cylinders. It is reciprocated thereby parallel to itself  
 10 and its working edge is curved to fit the curvature of the windscreen.

In the foregoing description reference has been made to the axis of curvature of the windscreen. Obviously in practice  
 15 the windscreen may have no strictly defined single axis, but the axis itself may have a locus comprising a curved surface. In the description and appended claims therefore reference to an axis of curvature  
 20 is not to be taken in a strict mathematical sense. Furthermore the screen may also be slightly curved about a second axis, say at right angles to the first, so that it may, to a slight degree be considered as  
 25 approximately to a toric or spherical surface.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we  
 30 claim is:—

1. In combination with a curved wind-  
 screen or like curved glass surface, a  
 35 wiper blade which is pivotally mounted and is itself flexible and normally curved so that throughout its movement it main-

tains wiping contact with the windscreen.

2. The combination according to claim 1 in which the blade is mounted on a pivoted arm, and having also spring  
 40 means to press the arm towards the windscreen and spacing means such as a roller between the arm and the windscreen.

3. The combination according to claim 1 or 2 in which the wiper blade comprises  
 45 a flexible member formed of flexible spring steel or the like to which the rubber blade is attached.

4. In combination with a curved wind-  
 screen or like curved glass surface a wiper  
 50 blade which comprises a plurality of sections pivotally mounted on a flexible and normally curved member and adapted to be moved over the windscreen by an  
 55 oscillatable arm.

5. In combination with a curved wind-  
 screen or like curved glass surface a wiper  
 blade which is curved to the shape of the  
 windscreen, and means to reciprocate the  
 60 blade in a direction parallel to the axis of curvature of the windscreen.

6. For curved windscreens or like curved glass surfaces, wiper mechanisms  
 as indicated in any of the preceding  
 65 claims.

7. For curved windscreens and the like wiper mechanisms substantially as described with reference to the accompany-  
 ing drawings.

Dated this 19th day of February, 1935.

E. WILLIAMSON,  
 Chartered Patent Agent.

Fig. 1.

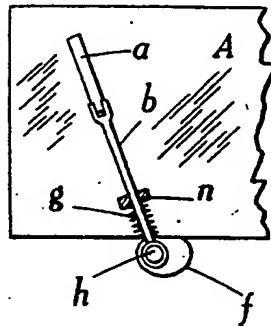


Fig. 2.



Fig. 3.

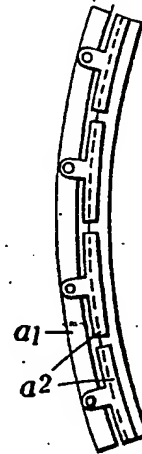


Fig. 4.

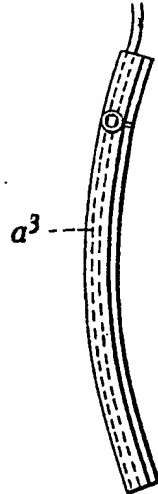
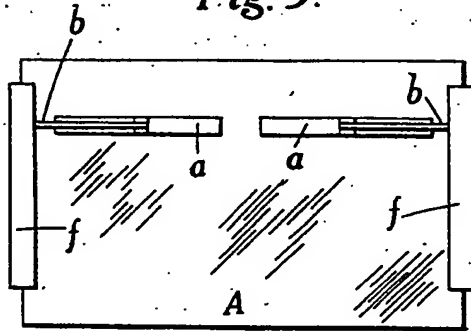


Fig. 5.



[This Drawing is a reproduction of the Original on a reduced scale.]